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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/839,759	04/20/2001	Filippo Pironti	1085-2	1279

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EXAMINER

NGUYEN, TAM M

ART UNIT

PAPER NUMBER

1764

DATE MAILED: 01/30/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/839,759

Applicant(s)

PIRONTI ET AL.

Examiner

Tam M. Nguyen

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1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1-13-03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 7-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 13, 2003 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-5 and 7-15 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation "wherein said cooling of said hydrocarbon gas stream by refrigeration does not include turbo-expansion of said hydrocarbon gas stream" in claims 1 and 14 and the limitation "wherein said cooling of said hydrocarbon gas stream does not include turbo-expansion of said hydrocarbon gas stream" in claim 12 were not described in the specification in such a way as to reasonably convey to one skilled in the art at the time the application was filed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-5 and 7-15 are rejected under 35 U.S.C. 103(a) as being unpatentable by Shu et al. (6,125,653) in view of either Yao et al. (6,116,050) or Campbell et al. (5,568,737) or Foglietta (5,890,377).

Shu discloses a process for producing liquefied natural gas from a gas mixture comprising methane, ethane, and propane. The process includes steps of cooling the gas mixture which is then distilled in a demethanizer column to produce a methane-rich stream and an ethane/propane-rich stream. The methane rich stream is then compressed, cooled at a first temperature and pressure, and expanded by turbo expanders to provide a methane-cooling source for a cryogenic heat exchanger. After the expanding step, the methane rich stream has a second temperature and pressure that are lower than the first temperature and pressure. The ethane/propane rich stream is then passed into a de-ethanizer column to distill ethane from propane. (See entire document)

Shu does not disclose that the cooling step of the gas mixture does not include turbo-expansion of the gas mixture. However, Yao, Campbell, and Foglietta disclose a process for recovering hydrocarbons (e.g., ethane, propane, and butane) from a gas feed which is cooled by a heat exchanger system (including refrigeration) wherein the system does not include a turbo expander. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Shu by using a cooling system that does not include turbo expansion in the cooling system as taught by Yao, Campbell, or Foglietta because the cooling system has an equivalent function as the cooling system of Shu. (See Foglietta Figure-1; col. 6, lines 42-46; see Yao, Figure 1; see Campbell Figures 1-10)

Shu does not specifically disclose that the gas mixture contains 40-80 % or 50-75% by mole of methane, 10-40% or 15-40% by mole of ethane, and 0.5-10% or 1-4 % by mole of propane. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Shu process by using a feed gas having the claimed

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composition because Shu discloses that the feed gas for the process may comprise any gaseous mixture of hydrocarbons containing at least some methane. Therefore, one having ordinary skill in the art would employ any gas mixture including the claimed gas feed in the process of Shu and it would be expected that the results would be the same or similar when using the claimed feed gas in the process of Shu. (See col. 2, lines 22-25)

Shu does not specifically disclose the percentage of purity of methane, ethane, and propane in recovery streams. However, the modified process of Shu is similar to the claimed process in term of feedstock, distilling, cooling, pressuring, and expanding. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Shu by operating the process under conditions to produce a stream of methane, ethane, and propane with the purity as claimed because one of ordinary skill in the art would determine to control and operate the distillation columns at effective conditions to arrive at the claimed purity if the claimed purity of methane, ethane, and propane is desirable.

Response to Remarks

The argument that the present invention does not utilize turbo-expansion of gas feed as taught by Shu is noted. However, the argument is not persuasive because as discussed above, the examiner's position is that it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Shu by using a cooling system that does not include turbo expansion in the cooling system as taught by Yao, Campbell, or Foglietta because the cooling system has an equivalent function as the cooling system of Shu.

The argument that the process of Shu would likely be inoperable for gas streams having hydrocarbon components as the claimed feed is noted. However, the argument is not persuasive because the Shu feedstock contains heavier hydrocarbons such as ethane, propane, and butane as claimed. In the Shu process, the heavier hydrocarbons would be separated from methane before the step of cooling and expanding of the methane rich stream. Therefore, one having ordinary skill in the art would employ any gas mixture including the claimed gas feed in the process of Shu and it would be expected that the results would be the same or similar when using the claimed feed gas in the process of Shu. (See col. 2, lines 22-25; col. 3, lines 22-27, 44-47)

The argument that Shu does not teach the claimed percentage of each component is noted. However, the argument is not persuasive because Shu discloses that the feed contains ethane, propane, and butane as claimed (See col. 3, lines 22-27, 44-47) and Shu does not limit the amount of each component. Therefore, the examiner maintains that one of skill in the art would use a feed gas having the claimed composition because one having ordinary skill in the art would employ any gas mixture including the claimed gas feed in the process of Shu and it would be expected that the results would be the same or similar when using the claimed feed gas in the process of Shu. There is no evidence that the process of Shu would not operate if the claimed feed is used in the process. It is also reminded that, in the modified process of Shu, the gas mixture feed is cooled by a cooling system which does not include turbo-expansion.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tam M. Nguyen whose telephone number is (703) 305-7715.

The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 703-308-6824. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-5408 for regular communications and (703) 305-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Tam M. Nguyen
Examiner
Art Unit 1764

Tam Nguyen/ TN
January 24, 2003


Walter D. Griffin
Primary Examiner